

REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 10-23, 25, and 27 are active in this application. Claims 10, 23, 25, and 27 are amended by the present amendment. Claims 1-9, 24, and 26 stand withdrawn in response to a previous restriction requirement.

In the outstanding Office Action, Claim 23 was objected to; Claims 10-23, 25, and 27 were rejected under 35 U.S.C. § 112, second paragraph; Claims 10, 11, 13, 25, and 27 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Publication 2005/0086486 to Yacobi et al. (herein “Yacobi”) in view of U.S. Patent No. 7,068,823 to Malik et al. (herein “Malik”); and Claims 12 and 14-22 were indicated as allowable if rewritten in independent form including the limitations of the base claim and any intervening claims and overcoming the rejections stated above.

Applicant gratefully acknowledges the indication of allowable subject matter of Claims 12 and 14-22.

Further, regarding the objection to Claim 23, Claim 23 is amended as indicated in the Office Action. Thus, it is respectfully requested the objection to the claims be withdrawn.

In addition, regarding the rejection under 35 U.S.C. § 112, second paragraph, Claims 10 and 25 are amended to recite “a plurality of second symbol sequences” and Claims 10, 25, and 27 are amended to remove the phrase “based on the symbols” to overcome the rejections in paragraphs 4a and 4b of the outstanding Office Action. Further, regarding the rejection in paragraph 4c, it is respectfully submitted that the limitation “the second symbol sequences” in Claims 11 and 15-18 have sufficient antecedent basis in amended Claim 10. On the other hand, Applicant respectfully submits that the “third symbol sequences extracted from the illegal copies,” recited in Claim 15, refers to an element that is properly introduced and does

not require further antecedent basis. In particular, Applicant submits that “third symbol sequences” are those that are “extracted from the illegal copies.” In addition, Applicant respectfully submits that the phrase “the third symbol sequences” in Claim 16 properly refers to “third symbol sequences” introduced in Claim 15. Thus, it is believed that the terminology used in Claims 15 and 16 is proper. Accordingly, it is respectfully requested the rejection under 35 U.S.C. § 112, second paragraph, be withdrawn.

In addition, Applicant respectfully traverses the rejection of Claims 10, 11, 13, 25, and 27 under 35 U.S.C. § 103(a) as unpatentable over Yacobi in view of Malik.

Claim 10 is directed to a digital watermark analysis apparatus for specifying at least one of a plurality of identification information items embedded as a plurality of watermark information items in a plurality of legal copies of digital contents used for collusive attacks, from a plurality of illegal copies of the digital contents obtained by collusive attacks made against the legal copies. The digital watermark analysis apparatus includes, in part, an extraction unit configured to extract a plurality of embedded codes including ranks from the illegal copies. Each of the ranks is uniquely numbered among each of the symbol sequences. The digital watermark analysis apparatus also includes an acquisition unit configured to acquire a plurality of symbols corresponding to the embedded codes and arrange the symbols in accordance with the ranks of the embedded codes. The acquisition unit is also configured to acquire a first symbol sequence of symbol sequences each of which includes a plurality of the symbols. Further, the digital watermark analysis apparatus includes a specifying unit configured to specify at least one of the identification information items embedded in the legal copies, based on a plurality of second symbol sequences uniquely assigned to the identification information items and the first symbol sequence. Independent Claims 25 and 27 include similar features directed to a digital watermark analysis method and a program

stored in a computer readable medium which enables a computer to function as a digital watermark analysis apparatus.

Applicant respectfully submits that Yacobi and Malik fail to teach or suggest each of the features of the independent claims. For example, Yacobi and Malik fail to teach or suggest symbols arranged in accordance with the rank of an embedded code and specifying at least one of the identification information items embedded in legal copies based on the arranged symbols.

Yacobi describes a collusion resistant watermarking and fingerprinting technology that assumes that a watermarking technique is robust against signal-processing attacks on protected digital goods and focuses on resisting collusion attacks against detection keys.¹ In other words, Yacobi describes a method for replacing a block of an inner code with digital watermark information. Further, Yacobi describes using an outer code such as in the B-S fingerprinting method (i.e., Boneh-Shaw Fingerprinting).² However, as noted in the Office Action, Yacobi fails to teach or suggest an extraction unit configured to extract a plurality of embedded codes including ranks, and an acquisition unit configured to acquire a plurality of symbols corresponding to the embedded codes and arrange the symbols in accordance with the ranks of the embedded codes, and acquire a first symbol sequence of symbol sequences each of which includes a plurality of the symbols.³

Applicant respectfully submits that Malik fails to supply the claimed features lacking in the disclosure of Yacobi. Further, Applicant respectfully traverses the assertion in the Office Action that a fingerprinting apparatus of Malik that arranges Key Sets (KSs) in ascending order reads on the claimed acquisition unit.⁴ Malik indicates that a Representative Master Key (RMK) has one or more Key Sets (KSs), and each KS “is read out in the form of

¹ Yacobi at paragraph [0067].

² Yacobi at paragraphs [0029]-[0031].

³ Office Action at page 5, first paragraph.

⁴ Office Action at page 5, second paragraph.

a list of tuples from the RMK, and arranged in ascending order of TupleOrder, as described above.”⁵ Malik further indicates that each tuple is of the form (x, y), where x is the segment number and y is the segment value. Further, Malik indicates that different KSs of an RMK may be of different lengths.⁶ Further, Malik indicates that different KSs could have different generation techniques, for example, such that KSs of specific ranks are generated for different RMKs.⁷ In addition, Malik indicates that a KS generation technique may start with a lowest order tuple with a highest master number followed by a higher order tuple than the first with a lower master number, followed by the next in decreasing order of master numbers.⁸ In other words, Malik indicates that a KS generation technique may be performed in an order based on a master number of a KS. However, Malik fails to teach or suggest a method of specifying at least one identification information item embedded in legal copies based on the range symbols in accordance with the ranks of the embedded codes. That is, according to Malik, data indicating whether each rank is higher or lower than another rank is not used for analysis, and although information items have different ranks according to Malik, the ranks are not compared to analyze data for specifying an identification information item.

Accordingly, it is respectfully submitted that Yacobi and Malik fail to teach or suggest “an acquisition unit configured to . . . arrange the symbols in accordance with the ranks of the embedded codes, and acquire a first symbol sequence of symbol sequences each of which includes a plurality of the symbols; and a specifying unit configured to specify at least one of the identification information items embedded in the legal copies, based on . . . the first symbol sequence,” as recited in independent Claim 10 and as similarly recited in independent Claims 25 and 27.

⁵ Malik at column 9, lines 36-40.

⁶ Malik at column 9, lines 40-41.

⁷ Malik at column 9, lines 53-57.

⁸ Malik at column 9, lines 62-67.

Therefore, it is respectfully submitted that independent Claims 10, 25, and 27, and claims depending therefrom, patentably define over Yacobi and Malik.

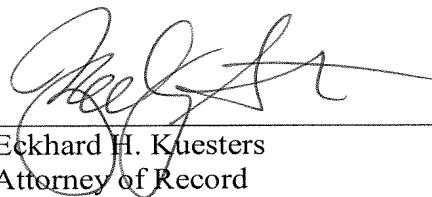
Accordingly, it is respectfully requested the rejection of Claims 10, 11, 13, 25, and 27 under 35 U.S.C. § 103(a) as unpatentable over Yacobi and Malik be withdrawn.

Accordingly, it is respectfully submitted that independent Claims 10, 25, and 27, and claims depending therefrom, are allowable.

Consequently, in light of the above discussion and in view of the present amendment, this application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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